

Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 950 941 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**06.09.2000 Bulletin 2000/36**

(51) Int. Cl.<sup>7</sup>: **G06F 1/00, G06F 12/14**

(43) Date of publication A2:  
**20.10.1999 Bulletin 1999/42**

(21) Application number: **98121065.1**

(22) Date of filing: **05.11.1998**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

(30) Priority: **18.03.1998 JP 6888198**

(71) Applicant: **FUJITSU LIMITED**  
**Kawasaki-shi, Kanagawa 211-8588 (JP)**

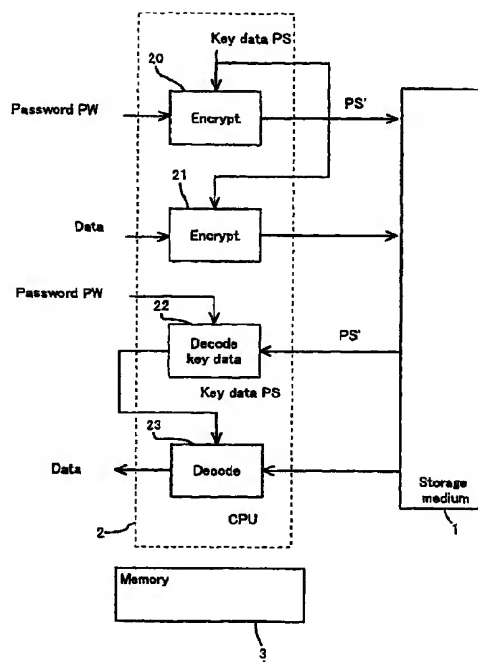
(72) Inventors:  
• **Kobayashi, Hiroyuki**  
**c/o Fujitsu Limited**  
**Kawasaki-shi, Kanagawa 211-8588 (JP)**  
• **Uchida, Yoshiaki**  
**c/o Fujitsu Limited**  
**Kawasaki-shi, Kanagawa 211-8588 (JP)**

(74) Representative:  
**Seeger, Wolfgang, Dipl.-Phys.**  
**Georg-Hager-Strasse 40**  
**81369 München (DE)**

(54) **Method of and apparatus for protecting data on storage medium and storage medium**

(57) Disclosed are a method and an apparatus for protecting data on a storage medium by encrypting the data to be recorded on the storage medium with a password. This method comprises a step of, generating, for changing key data on each memory unit by one password, the key data, thereafter encrypting the key data with the password and writing the encrypted data to the storage medium, and a step of encrypting the data with the key data and encrypted data to the storage medium. The method further comprises a step of reading the encrypted key data from the storage medium, a step of decoding the encrypted key data with the password, and a step of decoding the data on the storage medium with the decoded key data. The encryption is done by using the key data generated separately from the password, and it is therefore feasible to prevent the password from being analyzed by decoding a cipher text.

**FIG. 1**



**EP 0 950 941 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 1065

| DOCUMENTS CONSIDERED TO BE RELEVANT  |   |   |  |
|--|---|---|--|
| Category   | Citation of document with indication, where appropriate, of relevant passages   | Relevant to claim   | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| X  | US 5 267 313 A (HIRATA KOZO)<br>30 November 1993 (1993-11-30)   | 1,8,15  | G06F1/00<br>G06F12/14                        |
| A  | * column 2, line 65 - column 5, line 45 *<br>---  | 2-7,9-14  |  |
| X  | PATENT ABSTRACTS OF JAPAN<br>vol. 1998, no. 07,<br>31 March 1998 (1998-03-31)<br>& JP 09 293021 A (INTERNATL BUSINESS MACH<br>CORP &LT;IBM&GT;),<br>11 November 1997 (1997-11-11) | 1,8,15  |  |
| A  | * abstract *<br>& US 5 870 468 A (HARRISON)<br>9 February 1999 (1999-02-09)<br>* column 1, line 55 - column 2, line 27;<br>figures 1,3 *<br>---                                   | 2-7,9-14  |  |
| A  | US 5 677 952 A (ROGAWAY PHILLIP W ET AL)<br>14 October 1997 (1997-10-14)<br>* abstract *<br>-----   | 1,8,15  |  |
|  |   |   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.6)      |
|  |   |   | G06F   |
| The present search report has been drawn up for all claims   |   |   |  |
| Place of search<br><b>THE HAGUE</b>  |   | Date of completion of the search<br><b>13 July 2000</b>   | Examiner<br><b>Moens, R</b>                  |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |   | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |  |

EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 12 1065

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-07-2000

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
| US 5267313 A                              | 30-11-1993          | JP 6102822 A               | 15-04-1994          |
| JP 09293021 A                             | 11-11-1997          | US 5870468 A               | 09-02-1999          |
| US 5677952 A                              | 14-10-1997          | US 5454039 A               | 26-09-1995          |
|   |                     | EP 0658022 A               | 14-06-1995          |
|   |                     | JP 7199808 A               | 04-08-1995          |
|   |                     | SG 44363 A                 | 19-12-1997          |
|   |                     | US 5675652 A               | 07-10-1997          |
|   |                     | US 5835597 A               | 10-11-1998          |